

The Light company

Houston Lighting & Power South Texas Project Electric Generating Station P. O. Box 289 Wadsworth, Texas 77483

April 24, 1997

ST-HL-AE-5632

File No.: G26

10CFR50.73

STI: 30253054

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

South Texas Project
Unit 2
Docket No. STN 50-499
Licensee Event Report 97-005
Manual Unit Trip Due to Lowering Steam Generator Level

Pursuant to 10CFR50.73, South Texas Project submits the attached Unit 2 Licensee Event Report 97-005 regarding a manual unit trip due to lowering Steam Generator level. This event did not have an adverse effect on the health and safety of the public.

If you should have any questions on this matter, please contact Mr. S. M. Head at (512) 972-7136 or me at (512) 972-7988.



R. E. Masse
Plant Manager,
Unit 2

KJT/

Attachment: LER 97-005 (South Texas, Unit 2)

300027



e:\wp\nl\nrc-wk\ler-97\5632.wpm Project Manager on Behalf of the Participants in the South Texas Project

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Houston Lighting & Power Company
South Texas Project Electric Generating Station

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CATEGORY 1

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ACCESSION NRR:9704300253 DOC.DATE: 97/04/24 NOTARIZED: NO DOCKET #
FACIL:STN-50-499 South Texas Project, Unit 2, Houston Lighting & P 05000499
AUTH.NAME AUTHOR AFFILIATION
HEAD,S.M. Houston Lighting & Power Co.
MASSE,R.E. Houston Lighting & Power Co.
RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 97-005-00:on 970326,manual unit trip due to SG level
was caused by failure of seal-in relay in actuation circuit
for 2B main feedwater regulating valve solenoid controlled
air valve.Replaced seal-in relay.W/970424 ltr.

DISTRIBUTION CODE: IE22T COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 5
TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

NOTES:Standardized plant.

05000499

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	NRR/DRCH/HICB	1 1	NRR/DRCH/HOLB	1 1
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LICENSEE EVENT REPORT (LER)

(See reverse for required number of
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ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS
MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS.
REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE
LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD
COMMENTS REGARDING BURDEN ESTIMATE TO THE
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U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC
20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT

FACILITY NAME (1)

South Texas, Unit 2

DOCKET NUMBER (2)

05000 499

PAGE (3)

1 OF 3

TITLE (4)

Manual unit trip due to lowering Steam Generator level

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
03	26	97	97	-- 005	-- 00	04	24	97		05000
OPERATING MODE (9)		1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)							
POWER LEVEL (10)		100	20.2201(b)		20.2203(a)(2)(v)		50.73(a)(2)(i)		50.73(a)(2)(viii)	
			20.2203(a)(1)		20.2203(a)(3)(i)		50.73(a)(2)(ii)		50.73(a)(2)(x)	
			20.2203(a)(2)(i)		20.2203(a)(3)(ii)		50.73(a)(2)(iii)		73.71	
			20.2203(a)(2)(ii)		20.2203(a)(4)		X 50.73(a)(2)(iv)		OTHER	
			20.2203(a)(2)(iii)		50.36(c)(1)		50.73(a)(2)(v)		Specify in Abstract below or in NRC Form 368A	
			20.2203(a)(2)(iv)		50.36(c)(2)		50.73(a)(2)(vii)			

LICENSEE CONTACT FOR THIS LER (12)

NAME

Scott M. Head - Licensing Supervisor

TELEPHONE NUMBER (Include Area Code)

(512) 972-7136

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS
X	JB	RLY	W120	Y					

SUPPLEMENTAL REPORT EXPECTED (14)

YES
(If yes, complete EXPECTED SUBMISSION DATE).

X NO

EXPECTED
SUBMISSION
DATE (15)

MONTH DAY YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On March 26, 1997, Unit 2 was in Mode 1 at 100% power. At approximately 2146 hours, a 2B Steam Generator feed flow/steam flow mismatch alarm was received. The 2B Main Feedwater Regulating Valve was discovered not responding in the automatic mode of control. After attempts to manually control the 2B Main Feedwater Regulating Valve were unsuccessful and with 2B Steam Generator level decreasing towards the automatic trip setpoint, Unit 2 reactor was manually tripped at 2147 hours. All control rods fully inserted. The Engineered Safeguards Features System actuated the Auxiliary Feedwater System and Feedwater Isolation as expected for a reactor trip. All safety equipment operated as designed for a normal reactor trip. Subsequent troubleshooting determined that the cause of this occurrence was the failure of a seal-in relay for one of the two solenoid controlled air valves used to operate the 2B Main Feedwater Regulating Valve. Corrective actions included replacing the failed seal-in relay and verifying other seal-in relays affecting Main Feedwater Regulating Valves in both Unit 1 and 2 had proper coil resistances.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
South Texas, Unit 2	05000 499	97	005	00	2 OF 3

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

DESCRIPTION OF EVENT:

On March 26, 1997, Unit 2 was in Mode 1 at 100% power. At approximately 2146 hours, a 2B Steam Generator feed flow/steam flow mismatch alarm was received. All three Main Feed Pumps were in service and indicated normal speed. Feed flow for 2B Steam Generator indicated zero flow. The 2B Main Feedwater Regulating Valve was in automatic mode of control with a 100% demand signal. After attempts to manually control the 2B Main Feedwater Regulating Valve were unsuccessful and with 2B Steam Generator level decreasing towards the automatic trip setpoint, Unit 2 reactor was manually tripped at 2147 hours. All control rods fully inserted. The Engineered Safeguards Features System actuated the Auxiliary Feedwater System and Feedwater Isolation as expected for a reactor trip. All safety equipment operated as designed for a normal reactor trip.

When the Feedwater Isolation signal reset pushbutton was depressed while attempting to recover normal feedwater control following the unit trip, one of the two series solenoid controlled air valves used to operate the 2B Main Feedwater Regulating Valve would not reopen as designed. Subsequent troubleshooting determined that a seal-in relay had failed causing the solenoid to deenergize. This resulted in the affected solenoid controlled air valve to realign and instrument air to be ported off the 2B Main Feedwater Regulating Valve air operator. Without instrument air pressure, the 2B Main Feedwater Regulating Valve closed as designed.

Bench testing determined that the failed relay had a high out of tolerance coil resistance of 2000 ohms. The replacement relay, the seal-in relays for the other Unit 2 train Main Feedwater Regulating Valve control circuits, the other seal-in relay in the Unit 2 2B Main Feedwater Regulating Valve series control circuit, and Unit 1 relays were tested and determined to have coil resistances of approximately 900 ohms.

CAUSE OF EVENT:

The cause of this occurrence was failure of the seal-in relay in the actuation circuit for the 2B Main Feedwater Regulating Valve solenoid controlled air valve.

ANALYSIS OF EVENT:

Reactor Trips and Engineered Safeguards Features Actuations are reportable pursuant to 10CFR50.73(a)(2)(iv). The reactor was brought to an orderly shutdown. All Engineered Safeguards Features functioned as designed. There were no adverse safety or radiological consequences of this event.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
South Texas, Unit 2	05000 499	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	3 OF 3
		97	-- 005	-- 00	

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

CORRECTIVE ACTION:

1. The failed seal-in relay was replaced.
2. The coil resistances for other seal-in relays in the actuation circuits for both unit's Main Feedwater Regulating Valve solenoid controlled air valves were verified to be satisfactory .

ADDITIONAL INFORMATION:

There have been no similar events reported by the South Texas Project to the Nuclear Regulatory Commission within the last three years.

A failure mode analysis of the failed seal-in relay will be performed. Also, a single point failure analysis of the Main Feedwater Regulating Valve actuation circuit to identify possible design improvements is planned.

An Industry Review did not find similar events caused by the failure mechanism described in this report.